

Please add the following new claims (Support for these claims can be found in
Appendix A attached hereto):

274. (New) A method for producing a mutant molecule having at least one desired property, the method comprising:

(a) subjecting a plurality of parental polynucleotides to simultaneous mutagenesis so as to produce a plurality of mutant polynucleotides, wherein the mutagenesis comprises subjecting a codon-containing template polynucleotide to amplification using a plurality of degenerate oligonucleotides for each codon to be mutagenized, wherein

(i) the degenerate oligonucleotides each comprise a first homologous sequence and a plurality of degenerate triplet sequences;

(ii) the degeneracy of the triplet sequences includes multiple codons for all 20 amino acids; and

(iii) each degenerate triplet sequences is N,N,N, N,N,G/C or N,N,G/T, wherein N is any nucleotide base or a derivative thereof; and

(b) subjecting the mutant polynucleotides to a screening and enrichment process that creates ligation-compatible ends near the ends of the mutant polynucleotides, so as to select one or more mutant polynucleotides encoding at least one desired property.

275. A method for producing a mutant polynucleotide encoding at least one desired property, the method comprising:

(a) subjecting a plurality of parental polynucleotides to simultaneous mutagenesis so as to produce a plurality of mutant polynucleotides, wherein the mutagenesis comprises subjecting a codon-containing template polynucleotide to amplification using a degenerate oligonucleotide for each codon to be mutagenized, wherein the degenerate oligonucleotide comprises a first homologous sequence and a degenerate triplet sequence wherein the degenerate triplet sequence is N,N,G/T, wherein N is any nucleotide base or a derivative thereof, and

(b) subjecting the mutant polynucleotides to a screening and enrichment process that creates ligation-compatible ends near the ends of the mutant polynucleotides, so as to select one or more mutant polynucleotides encoding at least one desired property.

276. A method for producing a mutant molecule having at least one desirable property, the method comprising:

(a) subjecting a plurality of first polynucleotides to simultaneous mutagenesis so as to produce a plurality of progeny polynucleotides, wherein the mutagenesis comprises subjecting a codon-containing template polynucleotide to amplification using a plurality of degenerate oligonucleotide for each codon to be mutagenized, wherein the degenerate oligonucleotides each comprise a first homologous sequence and a plurality of degenerate triplet sequences,

wherein the degeneracy of the triplet sequences includes multiple codons for all 20 amino acids, and wherein each degenerate triplet sequences is N,N,C/G/T, N,N,C/T, N,N,N or N,N,A/C, wherein N is any nucleotide base or a derivative thereof; and

(b) subjecting the progeny polynucleotides to an end selection-based screening and enrichment process that creates ligation-compatible ends, so as to select one or more progeny polynucleotides encoding at least one desirable property.

277. A method for producing a mutant polynucleotide encoding at least one desirable property, the method comprising:

(a) subjecting a plurality of first polynucleotides to simultaneous mutagenesis so as to produce a plurality of progeny polynucleotides, wherein the mutagenesis comprises subjecting a codon-containing template polynucleotide to amplification using a degenerate oligonucleotide for each codon to be mutagenized, wherein the degenerate oligonucleotide comprises a first homologous sequence and a degenerate triplet sequence, wherein the degenerate triplet sequence is N,N,G/T, and

(b) subjecting the progeny polynucleotides to an end selection-based screening and enrichment process that creates ligation-compatible ends, so as to select one or more progeny polynucleotides encoding at least one desirable property.